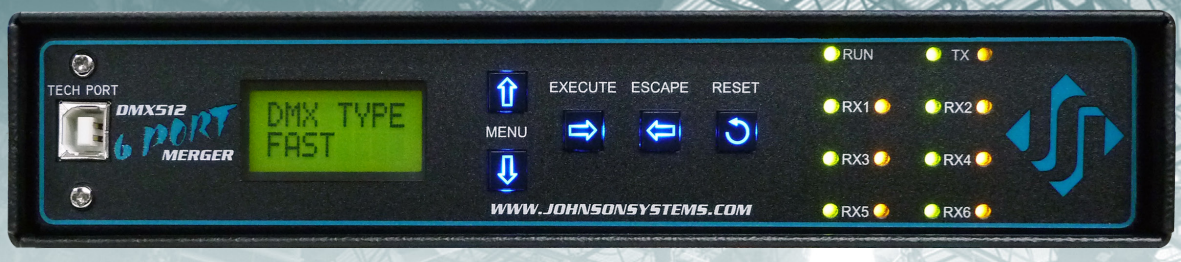

User Manual

DMX 6-PORT MERGER

Model	Description
DMX-6PIM	6-PORT Installation Merger for permanent hardwired installations
DMX-6PIM-FM	Flush Mount version of DMX-6PIM above
DMX-6PM-XLR	Portable 6-PORT Merger with 5 pin XLR connectors
DMX-6PM-XLR-RM	19" Rack Mount (1RU) 6-PORT Merger with 5 pin XLR connectors
DMX-6PM-TB	Portable 6-PORT Merger with “break-away” terminal block DMX connectors
DMX-6PM-TB-RM	19" Rack Mount (1RU) 6-PORT Merger with “break-away” terminal block DMX connectors
DMX-6PM-RJ45	Portable 6-PORT Merger with RJ45 “Ethercon” connectors
DMX-6PM-RJ45-RM	19" Rack Mount (1RU) Merger with RJ45 “Ethercon” connectors
*** PC not included. Requires Windows. PowerTerm software not included.**	

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Contents

Introduction 3
Characteristics 4
Drawings & Details 4
Example Application Riser Diagrams 6
Installation 8
Mounting Options 8
Power Supply Input Connections 9
DMX Input/Output Connections 10
DMX-6PM Controller Board 13
User Interface 14
System Status • LED Indicators 15
System Status • LCD Display 15
Quick Programming Reference to System Configuration Menu Items 16
Detailed Programming of System Configuration Menu Items 16
USB Tech Port Operation 19

Warranty

All DMX 6-PORT MERGER models come with a standard one (1) year limited warranty. Extended warranties of up to ten (10) years are available at the time of purchase.

For details visit www.johnsonsystems.com/warranties.htm

For Technical Assistance

1. Refer to your product user manual. The most current revision is available online: www.johnsonsystems.com/literature.htm
2. Contact the "point-of-sale" dealer or distributor from which this product was originally purchased, and ask for technical assistance.
3. If neither of the above can provide you with the necessary information, please contact our factory via email (info@johnsonsystems.com) or phone (403-287-8003) during business hours (Monday to Friday, 8:00AM to 5:00PM MST).

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Introduction

DMX 6-PM

JSI's DMX 6-PORT MERGER combines up to six DMX512 data lines into one DMX512 universe. A cost-effective DMX input management solution for temporary and hardwired installations requiring multiple DMX sources or multiple opto-isolated DMX input locations.

Model variants include compact portable, 19" rack mount and installation boxes for permanent installations. DMX I/O options include RJ45, terminal block and 5-Pin XLR connector.

Input DMX data streams are combined in a "Highest Take Precedence" (HTP) or "Pile On". Multiple units can be cascaded together for larger installations.

A USB "TECH PORT" interface (for use with a *PC) for ease of monitoring DMX output level data on all 512 channels at one time.

DMX 6-PIM

Features

- Six DMX512 inputs, one DMX512 output.
- State-of-the-art design permits "real-time" DMX merging/ combining of all six DMX inputs at 44 packets per second.
- LCD display for easy setup and monitoring.
- Power and data receive LED indicators.
- DMX I/O options include RJ-45, terminal block and 5 pin XLR connectors.
- USB "TECH PORT" for *PC monitoring of all DMX inputs and output.
- Removable EEPROM module allows for ease of firmware upgrade.
- Unique power saving standby (idle) mode reduces power consumption to less than 1 Watt, a "green" power management product.
- Keypad lockout prevents unauthorized access.
- Up to 10 year product warranty available.

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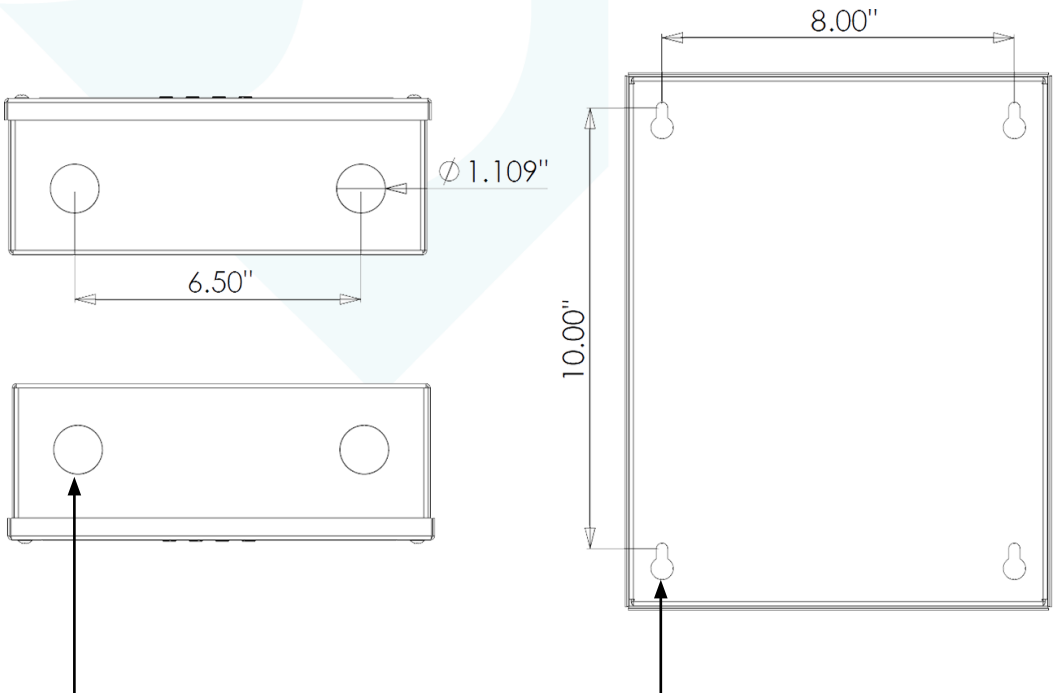
Characteristics

- Power Supply Requirements
  - DMX-6PM (all models) = 12VDC (adapter included).
  - DMX-6PIM (installation version) = 90 to 264VAC, 47-63HZ, 1Ø 3 wire.
- Environment
  - Temperature Range: 23°F (-5°C) to 104°F (40°C) ambient.
- Humidity Range: 0% to 90% non-condensing.
- Isolation
  - 2,500 Vrms minimum per DMX input.
  - Auto-resetting 240V polyswitch fusing of all DMX inputs and output.
- Physical
  - DMX-6PM (All models) = 9" x 7" x 1.75" (23 cm x 18 cm x 4.4 cm).
  - DMX-6PIM (Installation box version) = 9.5" x 12" x 3.4" (24 cm x 30 cm x 8.6 cm).
  - DMX-6PIM-FM (Flush Mount cover for above) = 11.7" x 14.2" (30 cm x 36 cm).
- Weight
  - DMX-6PM (Portable/table top version) = 3.6 lbs. (1.6 Kg).
  - DMX-6PIM (Installation box version) = 7.4 lbs. (3.3 Kg).
- Material
  - 18-gauge steel CRS.
- Finish
  - Hammer texture black powder coat.

Drawings & Details

Models: DMX-6PIM, DMX-6PIM-FM



(4) Knockouts For Wire/Conduit Entry

(4) Mounting Keyholes For 1/4" (6mm) Hardware

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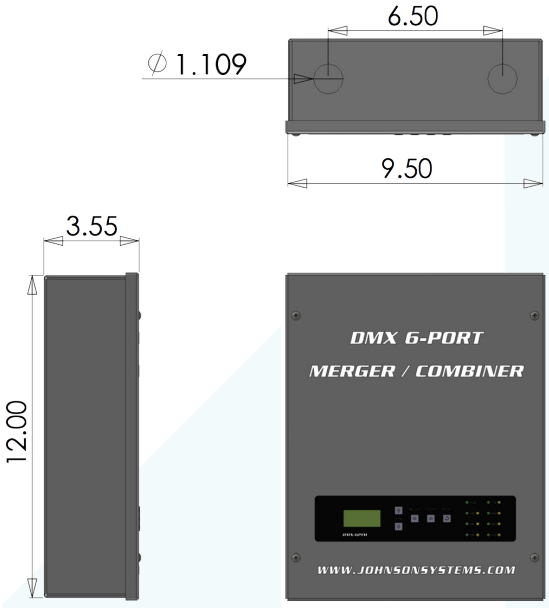
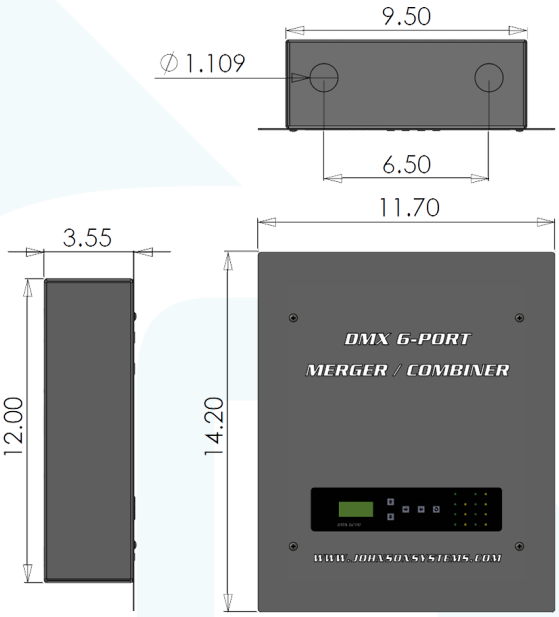
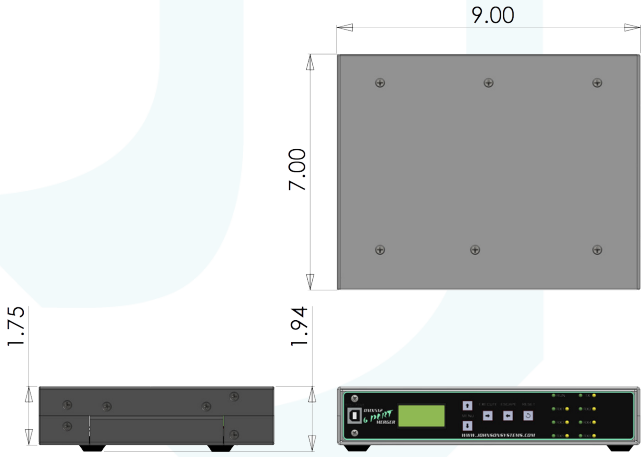
Model: DMX-6PIM



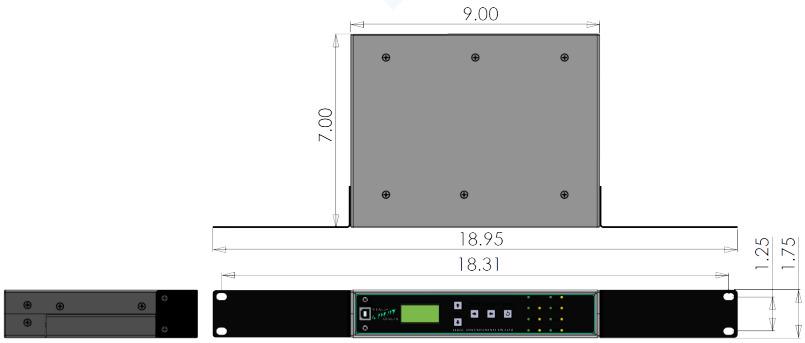
Model: DMX-6PIM-FM



Model: DMX-6PM



Model: DMX-6PM-RM



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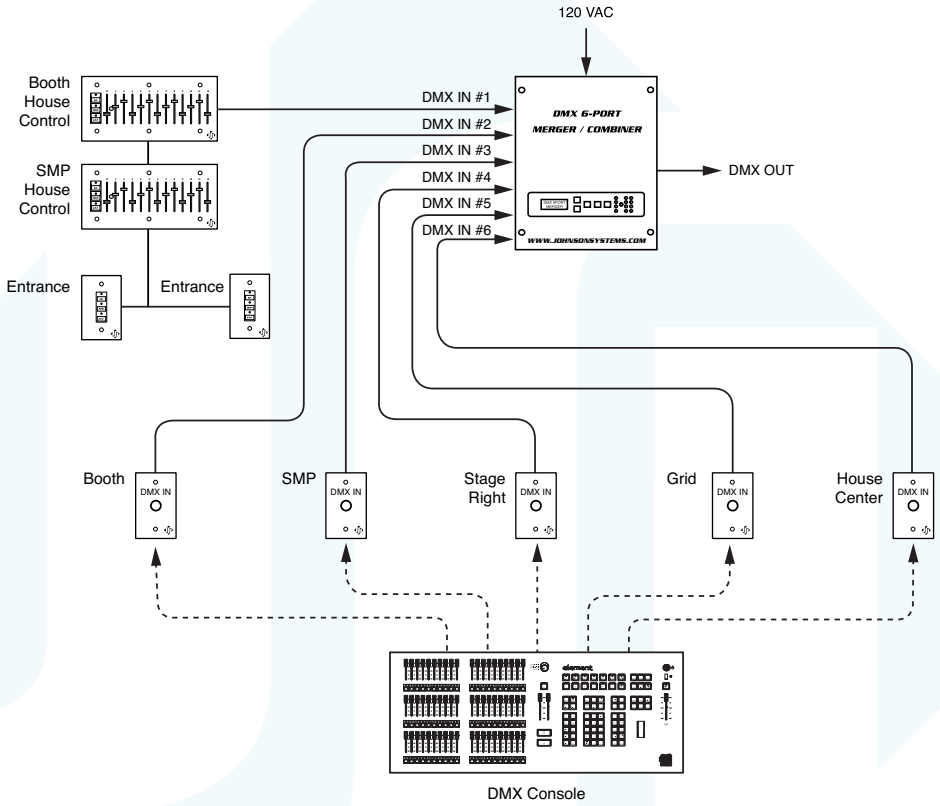
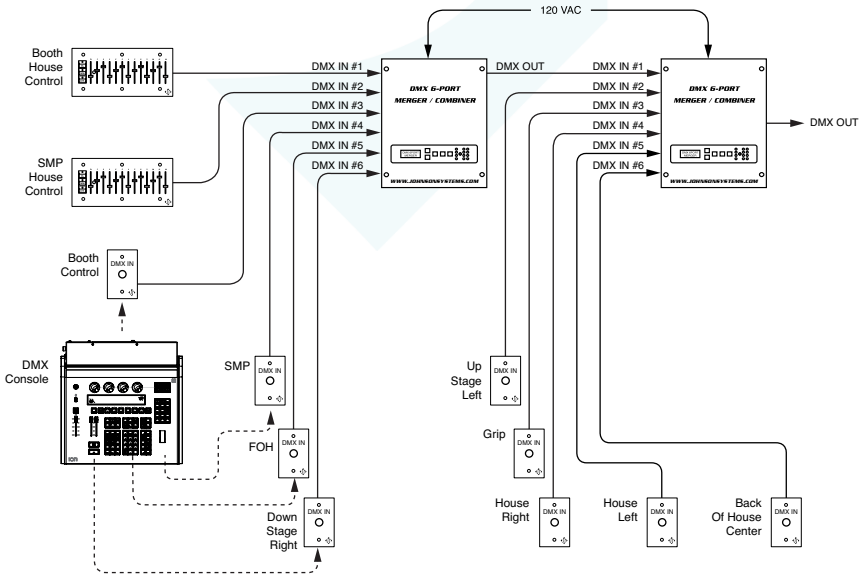
Example Application Riser Diagrams

Theatrical Example #1



Theatrical Example #2



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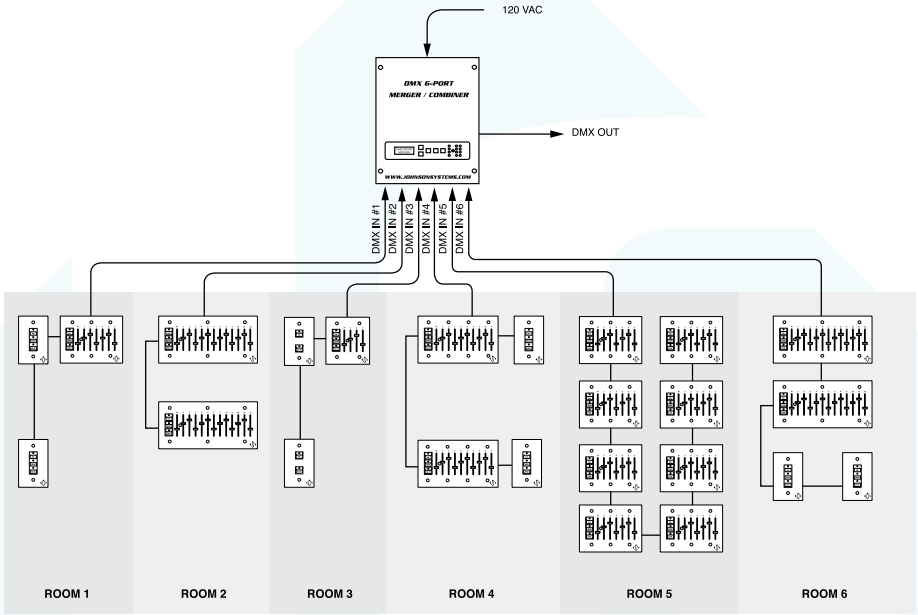
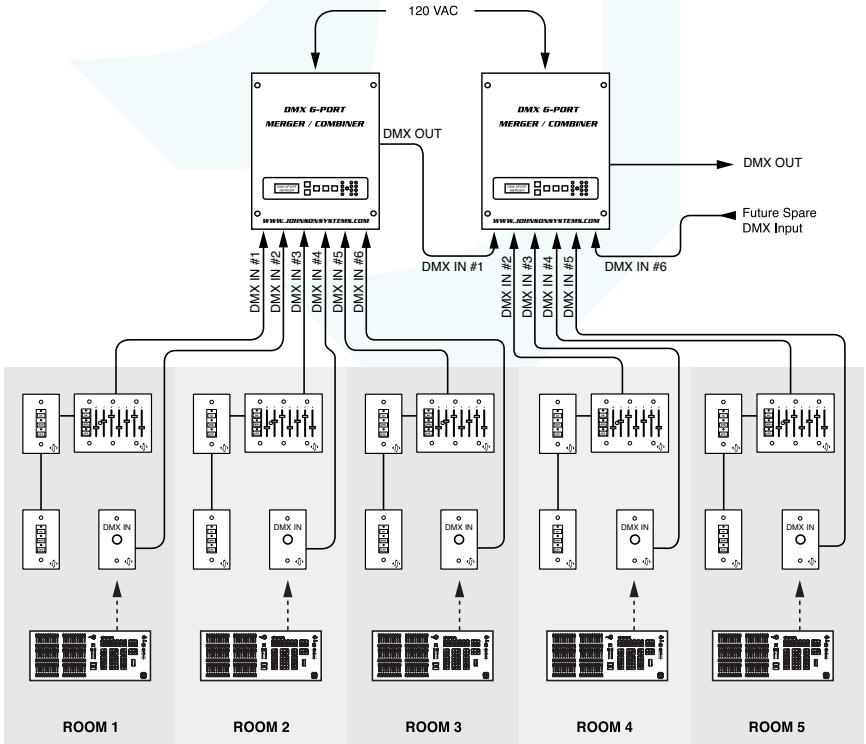
Example Application Riser Diagrams

Architetural Example #1



Architetural Example #2



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Installation

All DMX 6-PORT MERGER models are intended for indoor use only, in a controlled environment at room temperature..

- Mount in a suitable location.
  Refer to the ***Mounting Options*** section on page 8 for applicable details.
- Connect the applicable power supply input.
  Refer to the ***Power Supply Input Connections*** section on page 9 for applicable details.
- Connect DMX inputs and output.
  Refer to the ***DMX Input / Output Connections*** section on page 10 for details.
- Program, setup, test and verify functionality.
  Refer to the ***Detailed Programming of System Configuration Menu Items*** section on page 16 for details.
- Optionally, monitor/view the DMX channel levels on a PC.
  Refer to the ***USB Tech Port Operation*** section on page 19 for details.

WARNING: Type 1 enclosure for indoor use only!

Mounting Options

DMX 6-PORT MERGER models are capable of various mounting options to suit the application required.

Model: DMX-6PIM

Mount to any wall surface located in a suitable location. Four 1/4" (6mm) screws or bolts are required to fasten the enclosure safely to the wall (refer to drawing for mounting locations and dimensions). To access the mounting locations, simply remove the lid. The lid is secured by four (4) #6-32 x 3/8" machine screws. Use a #2 Philips screwdriver to remove the screws. Be sure to save the screws to re-install the lid once installation is complete.

Model: DMX-6PIM-FM

Mount inside a studded (3.5" minimum depth) wall for a flush finish in a suitable location. Four 1/4" (6mm) screws or bolts are required to fasten the enclosure safely in the wall (refer to drawing for mounting locations and dimensions). Alternatively, the enclosure may be mounted on the sides of the enclosure to a single stud or two studs with 9.5" centers. When side mounting the enclosure to studs, drill suitable mounting holes in the sides of the enclosure. When drilling holes on the side(s) of the enclosure, be sure to protect the internal electronics and clean out all metal filings. The lid is secured by four (4) #6-32 x 3/8" machine screws. Use a #2 Philips screwdriver to remove the screws. Be sure to save the screws to re-install the lid once installation is complete.

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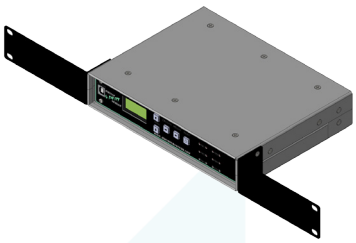
Models: DMX-6PM-XLR, DMX-6PM-TB, DMX-6PM-RJ45

For portable or permanent installation applications. Set on a flat surface in just about any indoor location. Rubber feet on the bottom of the enclosure help keep the enclosure in place.



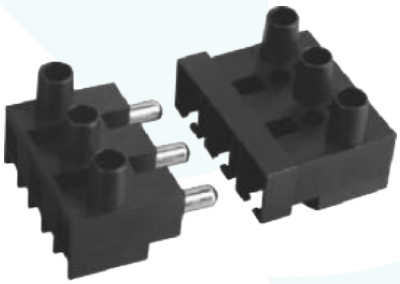
Models: DMX-6PM-XLR-RM, DMX-6PM-TB-RM, DMX-6PM-RJ45-RM

For 19" rack mount applications. Two (2) 19" rack mounting brackets are provided. To install the brackets, use a #2 Philips screwdriver to remove the four (4) (two (2) per side) mounting screws on the front-left side and front-right side, and fasten the brackets in place using the same mounting screws. Install the unit in a 19" rack using standard rack mounting hardware (not included).

Power Supply Input Connections

Models: DMX-6PIM, DMX-6PIM-FM

AC Power Supply Input: 100-240VAC, 1P3W, 20A (MAX), 50/60Hz.



With the lid removed, the AC power supply input termination area is located at the top of the enclosure. A break-away style terminal block is provided for the AC power supply input connections. Two (2) 1.109" knockouts (suitable for 0.75" conduit) are located on the top of the enclosure. The top-left knockout location is recommended for the AC wire (conduit) entry. Unplug the terminal block to terminate the three (3) wires. Use a 1/8" flathead screwdriver to torque the power terminals to the specification provided below. Once the wire termination is complete, plug the terminal block back in and ensure it is fully seated. Verify all wiring terminations and secure the lid before powering up.

- AC power supply connections: HOT (LINE), NEU (NEUTRAL), GND (GROUND)
- Use wire size #18 to #12 AWG (stranded or solid core) copper wire only, rated for 167°F (75°C) minimum.
- Strip insulation length to 0.25" (6.4mm).
- Torque power terminals (HOT, NEU, GND) to 4.5 IN-LBS (0.5 NM).

WARNING: AC power supply input requires an external disconnect (circuit breaker)!

WARNING: AC wiring termination must be completed by qualified personnel only!

WARNING: For connection use copper wire only, rated for 167°F (75°C) minimum.

WARNING: Ensure all AC power supply connections are tightened to the torque specification provided, before turning on the AC power supply!

WARNING: Ensure the enclosure lid is secure before turning on the AC power supply!

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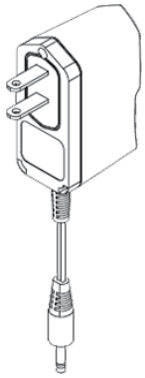
Models: DMX-6PM-XLR, DMX-6PM-TB, DMX-6PM-RJ45, DMX-6PM-XLR-RM, DMX-6PM-TB-RM, DMX-6PM-RJ45-RM



DC Power Supply Input: 12VDC, 0.5A (MIN)

A "wall wart" type AC-DC power supply is provided. Plug the power supply into a standard 120VAC Edison (NEMA 5-15 or 5-20) receptacle and plug the center positive 12VDC 2.1mm output plug into the jack located at the rear of the enclosure.

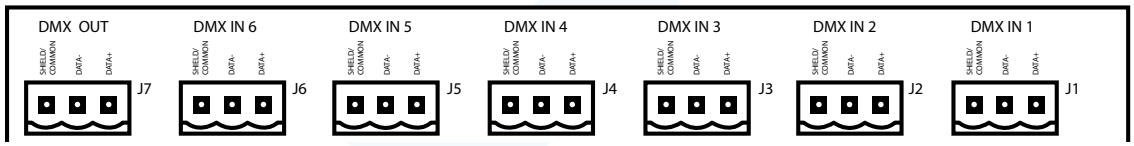
DMX Input/Output Connections

All DMX 6-PORT MERGER models are equipped with six (6) DMX input ports and one (1) DMX output port. All DMX inputs are terminated and must be the last (end-of-line) DMX receiving device in the daisy-chain topology. The DMX output is terminated as per the USITT DMX512-A protocol.

- Complies with USITT DMX512-A (ANSI E1.11 - 2008), standard protocol for digital data control.
- Recommended cable is Belden 9829, 9842, CAT 5 or equivalent (low-capacitance, twisted pair).
- Wiring must follow a daisy-chain topology.
- Maximum of 32 receiving devices on a single DMX line.
- Maximum cable length is 1,500 feet (455 meters).
- For more information, Google DMX, or visit: http://old.usitt.org/DMX512FAQ.aspx

Models: DMX-6PIM, DMX-6PIM-FM

DMX is connected via 3-pin breakaway type connectors, located on the DMX-6PM controller board. Two (2) 1.109" knockouts (suitable for 0.75" conduit) are located on the bottom of the enclosure, and are the recommended locations for the DMX wire (conduit) entry. Unplug the breakaway connector to terminate the three (3) wires. Use a 1/8" flathead screwdriver to torque the connector terminals to the specification provided below. Once the wire termination is complete, plug the breakaway connector back in and ensure it is fully seated. Verify all wiring terminations and secure the lid before powering up.



Breakaway Type Connector Wire Termination

- Strip insulation length to 0.3" (7.5mm).
- Torque connector terminals to 3.6 IN-LBS (0.4 NM).
- Be sure to isolate and protect all shield wires.

NOTE: For connection use copper wire only, rated for 167°F (75°C) minimum.

3-Pin Breakaway Type Connector Connection Details (Pinout)

- Pin 1 = DMX Shield / Common
- Pin 2 = DMX Data-
- Pin 3 = DMX Data+

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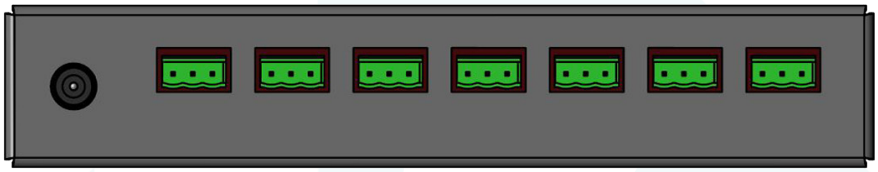
Models: DMX-6PM-TB, DMX-6PM-TB-RM

DMX is connected via 3-pin breakaway type connectors, located on the rear panel of the enclosure. Unplug the breakaway connector to terminate the three (3) wires. Use a 1/8" flathead screwdriver to torque the connector terminals to the specification provided below. Once the wire termination is complete, plug the breakaway connector back in and ensure it is fully seated.



Breakaway Type Connector Wire Termination

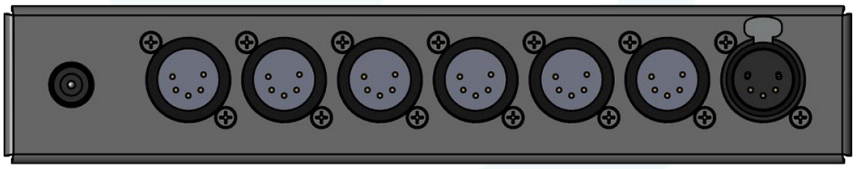
- Strip insulation length to 0.3" (7.5mm).
- Torque connector terminals to 3.6 IN-LBS (0.4 NM).
- Be sure to isolate and protect all shield wires.

3-Pin Breakaway Type Connector Connection Details (Pinout)

- Pin 1 = (SH) DMX Shield / Common
- Pin 2 = (D-) DMX Data-
- Pin 3 = (D+) DMX Data+

Models: DMX-6PM-XLR, DMX-6PM-XLR-RM

DMX is connected via 5-pin XLR type connectors, located on the rear panel of the enclosure. There are six (6) male connectors for the DMX inputs and one (1) female connector for the DMX output. Before connecting, ensure the DMX cable complies with industry standards.



5-Pin XLR Connection Details (Pinout)

Pin 1 = DMX Shield / Common
Pin 2 = DMX Data-
Pin 3 = DMX Data+
Pin 4 = Not Used / No Connection
Pin 5 = Not Used / No Connection

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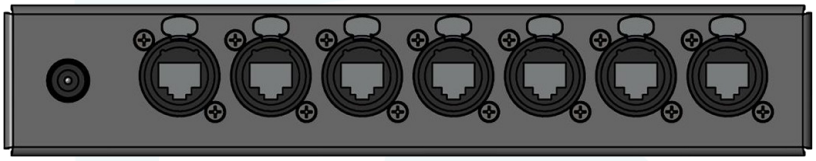
Models: DMX-6PM-RJ45, DMX-6PM-RJ45-RM

DMX is connected via RJ45 (etherCON) type connectors, located on the rear panel of the enclosure. There are seven (7) female connectors for the DMX inputs and output. For connection, use conventional Ethernet cables (CAT5 or CAT5e) terminated in either EIA/TIA 568A or 568B wiring standards. Neutrik etherCON cable connectors may be installed to lock the connectors in place.



RJ45 Connection Details (Pinout)

Pin 1 = DMX Data+
Pin 2 = DMX Data-
Pin 3 = Not Used / No Connection
Pin 4 = Not Used / No Connection
Pin 5 = Not Used / No Connection
Pin 6 = Not Used / No Connection
Pin 7 = DMX Shield / Common
Pin 8 = DMX Shield / Common

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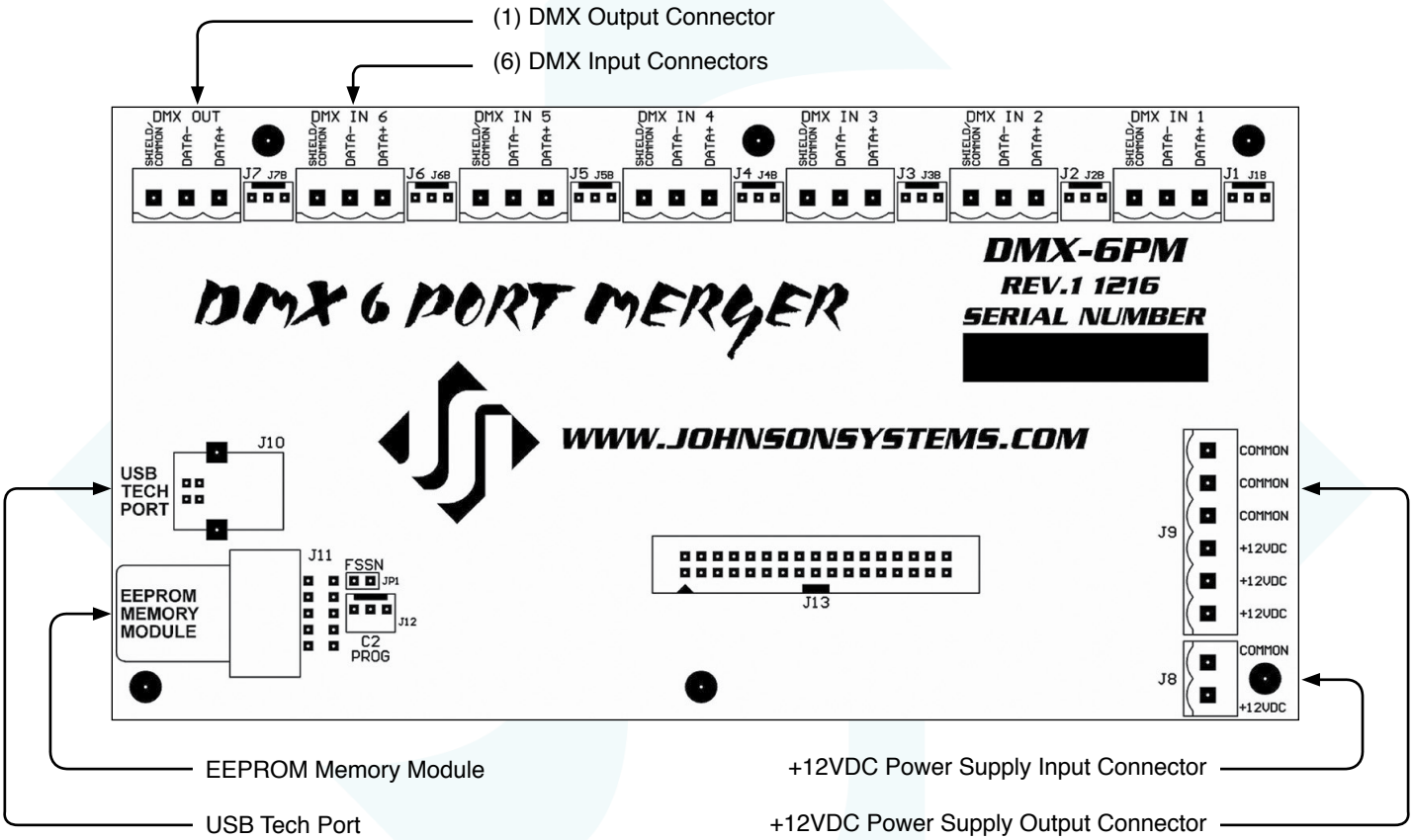
DMX-6PM Controller Board

The DMX-6PM controller board is the central electronic control system (aka brain) for all DMX 6-PORT MERGER models.



+12VDC Power Supply Output for Models: DMX-6PIM, DMX-6PIM-FM

The AC-DC power supply located at the top of the enclosure is capable sourcing up to a total of 30 Watts (2.4 Amps) of power at 12VDC. Up to 24 Watts (2 Amps) may be used to power external devices via the provided 6-pin breakaway type connector. Two (2) 1.109" knockouts (suitable for 0.75" conduit) are located on the bottom of the enclosure, and are the recommended locations for the DC wire (conduit) entry. Unplug the breakaway connector to terminate the wires. Use a 1/8" flathead screwdriver to torque the connector terminals to the specification provided below. Once the wire termination is complete, plug the breakaway connector back in and ensure it is fully seated. Verify all wiring terminations and secure the lid before powering up.

Breakaway Type Connector Wire Termination

- Terminate to +12VDC and COMMON on the J9 connector.
- Use wire size #28 to #12 AWG copper wire only, rated for 167°F (75°C) minimum.
- Strip insulation length to 0.3" (7.5mm).
- Torque connector terminals to 3.6 IN-LBS (0.4 NM).

NOTE: Ensure external devices do not exceed the maximum combined current draw of 2 Amps.

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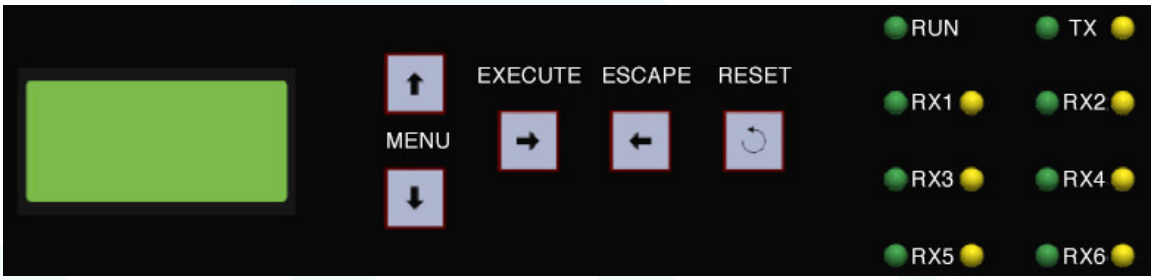
User Interface

All DMX 6-PORT MERGER models are equipped with a user interface located on the front panel of the enclosure. The user interface provides access to all programming and configuration settings. System status is easily visible on the LCD display and LED indicators.



LCD Display | Programming Switches | Status LED Indicators

All of the programming is accomplished using four (4) switches. Within a few minutes, most users will find the menu structure very intuitive and easy to navigate. All configuration settings are automatically stored into an on-board EEPROM.

LCD Display

The LCD display is capable of displaying 2 lines of 8 Characters. A backlight automatically comes on when activity is sensed on the switches. The LCD contrast can be easily adjusted for optimum viewing. Refer to menu item "LCD VIEW" on page 18 for further details.

Programming Switches

The MENU UP/DOWN (▲▼) switches are used for navigating through the various system configuration menu items. They also allow for programming of other specific parameters within a selected menu. Pressing and holding either switch will speed up the scroll rate, which can be helpful to speed up the configuration time.

The EXECUTE (►) switch is normally used to select/enter a menu item, advance forward within a selected menu item, or toggle between parameters within a selected menu item.

The ESCAPE (◄) switch is normally used to back up within a selected menu item one step at a time or exit the menu completely.

NOTE: The programming switches can be locked out to prevent inadvertent configuration changes. To toggle between "LOCKED!!" and "UNLOCKED" press and hold down the EXECUTE and then ESCAPE switches at the same time for 4-5 seconds.

The RESET switch has two purposes. First, it allows for quick exit from a menu item after a programming change and automatically puts the system into normal run mode. Second, it provides a soft reboot for the systems microcontroller.

The programming switches are backlit with blue LED's. The LED's automatically turn on when activity is sensed.

NOTE: A detailed procedure for programming all system configuration menu items can be found on pages 16 to 18.

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System Status • LED Indicators

RUN (Green)

Illuminates when the system is powered on and the microcontroller is functioning normally.

RX1, RX2, RX3, RX4, RX5, RX6 (Green and Yellow)

The green LED illuminates when the DMX input port is powered on and the isolated power supply is functioning normally. The yellow LED illuminates when valid DMX is received and flashes when invalid DMX is received.

TX (Green and Yellow)

The green and yellow LED's illuminate when any of the DMX input ports are powered on and the system is transmitting DMX.

System Status • LCD Display

The top line of the LCD display shows the system is a DMX "6-PORT" MERGER, unless the system configuration menu items are being accessed.

The bottom line of the LCD display shows the number of valid DMX inputs being received and merged ("MERGE 0" thru "MERGE 6"), unless the system configuration menu items are being accessed, or abnormal system status is detected and displayed as follows:

RTC ERR!

Displayed when the system detects a runtime counter (RTC) error. This occurs when there is an invalid hard-key code, and the runtime counter is greater than 2160 hours (90 days). Refer to menu item "HARD-KEY" on page 17 for further details.

USB ERR!

Displayed when the Tech Port is enabled and connected to a PC with the terminal emulator running, and then a USB error occurs. When using the Tech Port to monitor DMX via a PC, be sure to read and follow the instructions included in the USB Tech Port Operation section starting on page 19 of this manual.

LOCKED!

Displayed when an attempt is made to access the system configuration menu items and the programming switches are locked out. To toggle between "LOCKED!" and "UNLOCKED" press and hold down the "EXECUTE" and then "ESCAPE" switches at the same time for 4-5 seconds.

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Quick Programming Reference to System Configuration Menu Items

1. **DMX TYPE** Set the DMX output data rate to fast, medium or slow.
2. **DMX PORT** Turn the power on or off for each of the 6 DMX input ports.
3. **TECHPORT** Enable or disable the USB Tech Port used to monitor DMX via a PC.
4. **RTIME** View the total run time of the microcontroller.
5. **HARD-KEY** View the microcontroller's unique eight-character hard-key code.
6. **SERIAL#** View the microcontroller's unique eight-character silicone serial number.
7. **VERSION** View the microcontroller's firmware version.
8. **EEPROM** View the type of EEPROM memory module plugged in.
9. **FW-LOAD** Load firmware into the microcontroller via the EEPROM memory module.
10. **LCD VIEW** Adjust the contrast of the LCD Display for optimum viewing.

Detailed Programming of System Configuration Menu Items

NOTE: The programming switches can be locked out to prevent inadvertent configuration changes. To toggle between "LOCKED!!" and "UNLOCKED" press and hold down the EXECUTE and then ESCAPE switches at the same time for 4-5 seconds.

The sequence of the following system configuration menu items appear as the MENU DOWN (↓) switch is pressed. Pressing the MENU UP (↑) switch will sequence the system configuration menu items in the opposite order. Pressing and holding either of the MENU UP/DOWN (↕) switches will speed up the scroll rate, which can be helpful to speed up the configuration time.

1. DMX TYPE *Set the DMX output data rate to fast, medium or slow.*

The DMX output data rate may be adjusted for compatibility with some older legacy DMX equipment incapable of receiving the maximum DMX output data rate. If there is a problem receiving DMX from the DMX 6-PORT MERGER, try adjusting the DMX output data rate.

FAST is the maximum setting for the DMX output data rate, transmitting 44pps (Packets Per Second). FAST is the factory default.

MEDIUM is the intermediate setting for the DMX output data rate, transmitting 37pps (Packets Per Second).

SLOW is the minimum setting for the DMX output data rate, transmitting 30pps (Packets Per Second).

FAST	Press EXECUTE to toggle the DMX output data rate to FAST.
MEDIUM	Press EXECUTE to toggle the DMX output data rate to MEDIUM.
SLOW	Press EXECUTE to toggle the DMX output data rate to SLOW.

Any change in the configuration is automatically saved.

2. DMX PORT *Turn the power on or off for each of the 6 DMX input ports.*

Each of the 6 DMX input ports may be powered off to conserve energy when DMX input(s) are not connected or in use. Powering off DMX input port(s) may also be used as a troubleshooting tool. When the DMX input port power is off, DMX can not be received on the input. The corresponding green RX LED is illuminated when the power is on and extinguished when the power is off. All 6 of the DMX input ports are powered on by factory default.

Press EXECUTE to enter the menu.

IN 1 ON	Displays the DMX input (IN 1) port and the power setting (ON).
IN 6 ON	Press MENU (↕) to select the DMX input port from 1 to 6.
IN 6 OFF	Press EXECUTE to toggle the power setting ON or OFF.

Any change in the configuration is automatically saved.

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3. TECHPORT *Enable or disable the USB Tech Port used to monitor DMX via a PC.*

A USB Tech Port is provided on all DMX 6-PORT MERGER models. For models DMX-6PM-XLR, DMX-6PM-TB, DMX-6PM-RJ45, DMX-6PM-XLR-RM, DMX-6PM-TB-RM and DMX-6PM-RJ45-RM, the Tech Port is located on the front panel of the enclosure. For models DMX-6PIM and DMX-6PIM-FM, the Tech Port is located on the DMX-6PM controller board.

When using the Tech Port to monitor DMX via a PC, be sure to read and follow the instructions included in the USB Tech Port Operation section starting on page 19 of this manual.

DISABLED	Press EXECUTE to toggle the Tech Port from DISABLED to ENABLED.
ENABLED	Press EXECUTE to toggle the Tech Port from ENABLED to DISABLED.
	Any change in the configuration is automatically saved.

4. RTIME *View the total run time of the microcontroller.*

The run time counter keeps track of the total time the microcontroller is powered up. The maximum time is 99999 hours, 59 minutes, 59 seconds, or about 11.4 years. System operation is not effected when the maximum run time is reached and can be reset to zero at the factory.

RTIME SS	Shows the number of seconds (SS) of run time.
HHHHH:MM	Shows the number of hours (HHHHH) and minutes (MM) of run time.

5. HARD-KEY *View the microcontroller's unique eight-character hard-key code.*

The DMX 6-PORT MERGER may be shipped with an invalid hard-key code of 00000000. A valid hard-key must be entered before the run time (RTIME) counter reaches 2160 hours/90 days. If the run time expires without a valid hard-key the LCD display will show a runtime counter error (RTC ERR!) and the DMX output port transmits all zero level data, rendering it useless until a valid hard-key code is entered. This feature can help to ensure full and timely payments for product distributors.

HARD-KEY	A dash (-) between HARD and KEY represents a valid hard-key.
HARD KEY	A blank space between HARD and KEY represents an invalid hard-key.
XXXXXXXX	Shows the unique eight-character hard-key code (XXXXXXXX).
DISABLED	This menu is disabled to help prevent inadvertent changes.
DISABLED	Follow the procedure below to enable the menu and modify the hard-key.
ENABLED	Press and hold MENU (▲) and MENU (▼) at the same time for 4-5 seconds.
XXXXXXXX	The cursor (_) indicates the hard-key character being modified.
XXXXXXXX	Press MENU (▲▼) to modify the hard-key character.
XXXXXXXX	Press EXECUTE to advance within the menu, to the next hard-key character.
XXXXXXXX	Press ESCAPE to back up within the menu, to previous hard-key character.
XXXXXXXX	Repeat until all characters are modified to the desired (valid) hard-key code.
	Press ESCAPE to exit the menu and save the desired hard-key code.
	Press RESET to exit the menu without saving.
	The menu will automatically timeout after 2 minutes of inactivity and save.

NOTE: Be sure to record and file the hard-key code for future reference.

6. SERIAL# *View the microcontroller's unique eight-character silicone serial number.*

XXXXXXXX	Shows the unique eight-character serial number.

7. VERSION# *View the microcontroller's software version.*

VER X.X	Shows the microcontroller's software version.

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8. EEPROM *View the type of EEPROM memory module plugged in.*

An EEPROM memory module is not installed on DMX 6-PORT MERGER products. If a firmware update is required, Johnson Systems Inc. may supply an EEPROM memory module with the latest firmware version. A firmware (F) type EEPROM is used to update the current firmware version running on the DMX-6PM microcontroller to the firmware version saved on the EEPROM.

NO MEM !	Indicates the EEPROM memory module is not installed.
6PORT-F	Indicates the EEPROM type is programmed for firmware (F) operation.
VER X.X	Press EXECUTE to display the version (VER) of the firmware.
DISABLED	Press EXECUTE and the menu feature is disabled for factory use only.

9. FW-LOAD *Load firmware into the microcontroller via the EEPROM memory module.*

If a firmware update is required, Johnson Systems Inc. may supply an EEPROM memory module with the latest firmware version. The firmware EEPROM memory module must be inserted into EEPROM memory module port located on the DMX-6PM controller board, and the firmware can then be loaded into the microcontroller.

Press EXECUTE to enter the menu.

DISABLED	This menu is disabled for inadvertent use. Proceed to enable.
ENABLED	Press and hold MENU (▼) and MENU (▲) at the same time for 4-5 seconds.
MEMCHECK	Automatically checks the EEPROM memory module for firmware type.
CRC-TEST	Automatically does a CRC test on the firmware code in the EEPROM.
>>>>>>>>	CRC test in progress.
VER X.X	Displays the firmware version on the EEPROM memory module.
UPDATE??	Press EXECUTE to proceed.
SURE ???	Press EXECUTE to proceed.
UPDATING	Firmware update in progress.
WILL	Firmware update in progress.
AUTO	Firmware update in progress.
RESTART	Firmware update in progress.
PLEASE	Firmware update in progress.
WAIT....	When update is complete the RUN LED flashes and system restarts.
NO MEM!	Displayed if an EEPROM memory module is not detected.
WRONG	Displayed if wrong type (parameter) EEPROM memory module is detected.
MEM TYPE	Displayed if wrong type (parameter) EEPROM memory module is detected.
WRONG	Displayed if wrong product type of EEPROM memory module detected.
PRODUCT	Displayed if wrong product type of EEPROM memory module detected.
CRC ERR!	Displayed if CRC test fails and the EEPROM memory module is defective.

WARNING: Do not reset or turn the power off while the firmware is being updated. Doing so will cause unrecoverable loss of firmware data that is being loaded into the DMX-6PM microcontroller.

10. LCD VIEW *Adjust the contrast of the LCD Display for optimum viewing.*

Press EXECUTE to enter the menu.

ADJUST ▼▲	Press MENU (▲▼) to adjust the LCD contrast.

Press ESCAPE to exit the menu and save the desired LCD view.

Press RESET to exit the menu without saving.

The menu will automatically timeout after 2 minutes of inactivity and save.

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USB Tech Port Operation

The Tech Port is used to connect to a PC via USB. Emulation software such as PowerTerm® may be used to monitor/view the DMX channel levels received on each of the DMX input ports, as well as the DMX channel levels transmitted on the DMX output port. Other diagnostics such as status, packet size, packet rate can also be viewed.

PowerTerm® Lite is the PC emulation software recommended by the factory. Other software that emulates VT52 may be used, but is not advised or supported in this manual.

PowerTerm® Lite Specifications: http://www.ericom.com/specs/Lite_Plus.pdf

Buy PowerTerm® Lite Online: https://www.ericom.com/BuyNow/default.asp

Once PowerTerm® Lite has been downloaded and installed on a PC, it is very important to set it up correctly to communicate with the host DMX 6-PORT MERGER.

NOTE: Johnson Systems Inc. is not responsible for any PC related problems! In no event shall Johnson Systems Inc. be liable for any direct, indirect, incidental, special, exemplary, or consequential damages (including, but not limited to, procurement of substitute goods or services; loss of use, data, or profits; or business interruption) however caused and on any theory of liability, whether in contract, strict liability, or tort (including negligence or otherwise) arising in any way out of the use of this software, even if advised of the possibility of such damage.

NOTE: Use of the Tech Port is recommended for proficient PC users only!

USB Tech Port Connection and Disconnection Procedure

NOTE: Ensure the DMX 6-PORT MERGER menu item TECHPORT is set to DISABLED. If TECHPORT is set to ENABLED before communications is established with the terminal emulator, it will lock up the PC and may require a reboot. Be extremely diligent in the connection and disconnection procedure.

Connection Procedure:

1. Ensure the DMX 6-PORT MERGER menu item TECHPORT is set to DISABLED.
2. Use a standard USB A type male to B type male cable (printer cable) to connect the Tech Port to a USB connector on the PC (USB Cable not included).

NOTE: To establish communication between the DMX 6-PORT MERGER and PC, the correct USB driver needs to be installed on the PC. Refer to the **USB Driver Information** section on page 23 for details.

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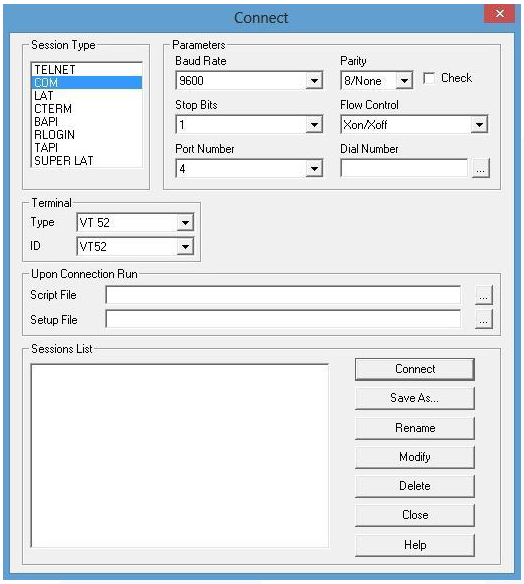

3. Open PowerTerm® Lite on the PC.

   The "Connect" window automatically pops up when PowerTerm® is first opened. Alternatively, select the "Communication" menu tab and click "Connect". Set "Session Type" to "COM" and "Terminal Type" to "VT 52". In the "Parameters" area, the only important setting is the "Port Number" (all other settings within the "Parameters" area are ineffective). Be sure the correct "Port Number" is selected. If unsure of the "Port Number", refer to point 7 of the **USB Driver Information** section on page 23.

   Click "Connect" to continue.

4. On the DMX 6-PORT MERGER, go to menu item TECHPORT and set to ENABLED. A hybrid USB symbol appears on the top line of the LCD display to indicate valid communication between the DMX 6-PORT MERGER and PowerTerm® Lite on the PC.

5. Monitor/view the DMX channel levels received on each of the DMX input ports, as well as the DMX channel levels transmitted on the DMX output port. Other diagnostics such as status, packet size, packet rate can also be viewed.
   - Press the "R" key to refresh the screen.
   - Press the "1" key to view the DMX input port 1 levels.
   - Press the "2" key to view the DMX input port 2 levels.
   - Press the "3" key to view the DMX input port 3 levels.
   - Press the "4" key to view the DMX input port 4 levels.
   - Press the "5" key to view the DMX input port 5 levels.
   - Press the "6" key to view the DMX input port 6 levels.
   - Press the "7" key to view the DMX output port levels.
   - Press the "U" key to toggle the units displayed (Percent, Hexadecimal or Decimal).

NOTE: For suitable viewing, some setup is required. Refer to the **PowerTerm® Lite Terminal Setup Information** section on page 21 for details.

NOTE: Once viewing is complete, be sure to disconnect from the session properly as indicated below.

Disconnection Procedure:

6. On the DMX 6-PORT MERGER, go to menu item TECHPORT and set to DISABLED.
7. On PowerTerm® Lite, select the "Communication" menu tab and click "Disconnect".
8. Close PowerTerm® Lite on the PC.
9. Disconnect the USB cable from the Tech Port and PC.

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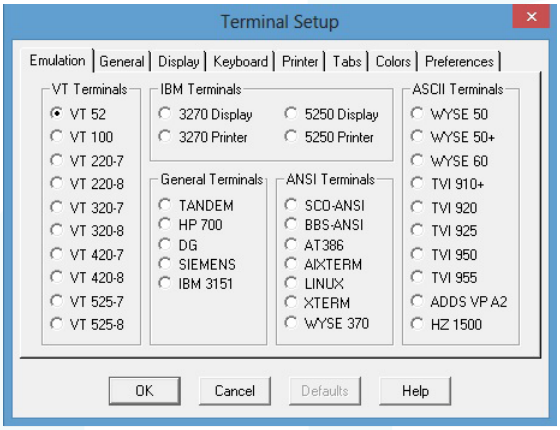
PowerTerm® Lite Terminal Setup Information

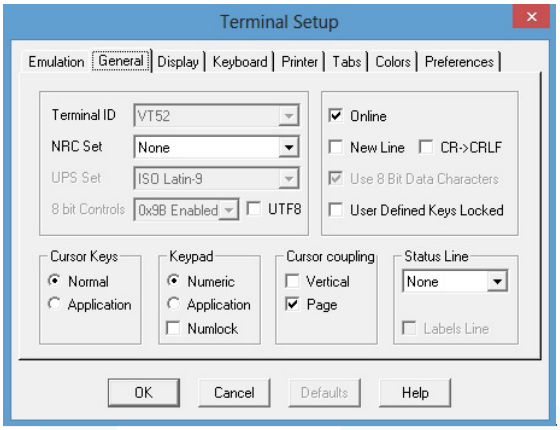
For suitable viewing, some setup is required.

On PowerTerm® Lite, select the "Terminal" menu tab and click "Setup". The "Terminal Setup" window pops up, and the following settings should be configured for each of the tabs:

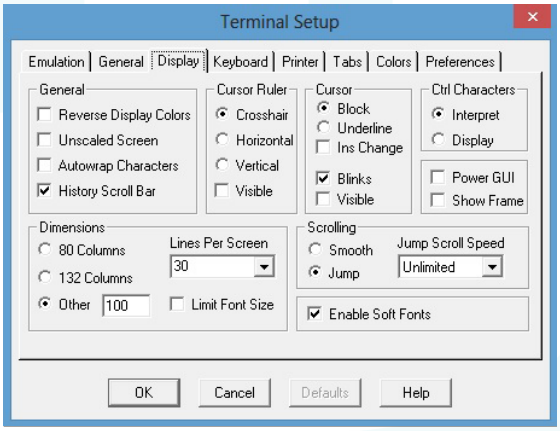
Emulation



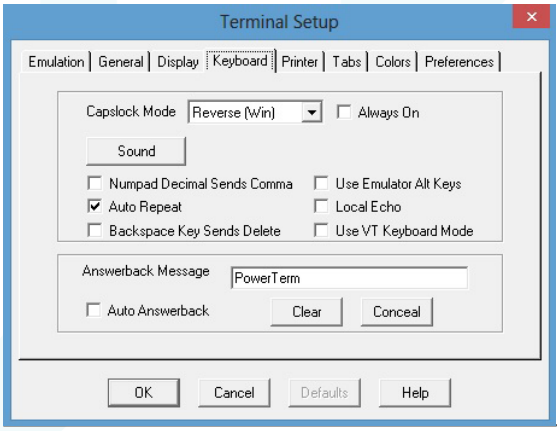
General



Display



Keyboard



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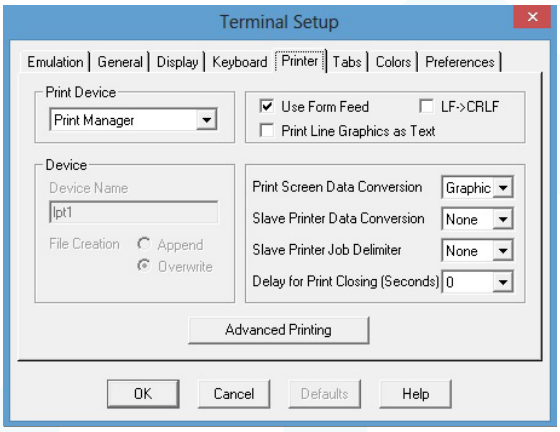
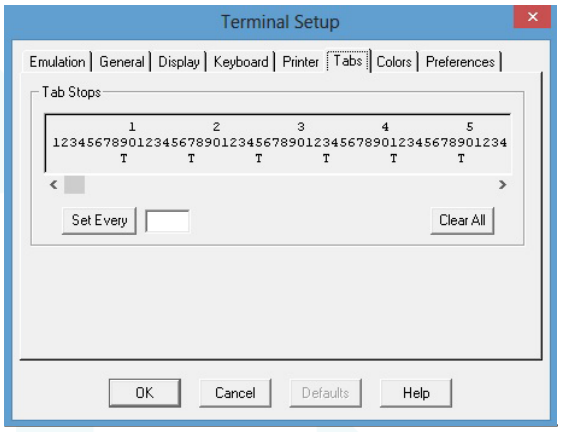
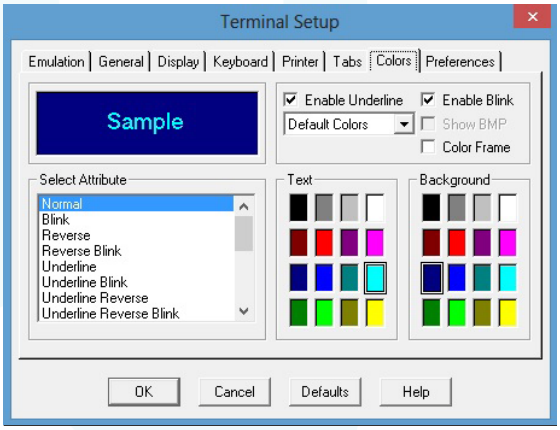
Printer



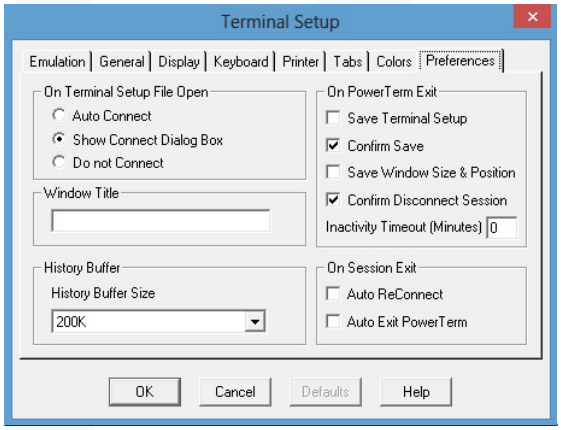
Tabs



Colors



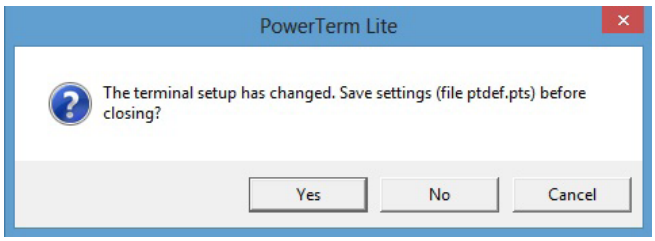
Preferences



Important Pointers:

- Most tabs will not require modification but should be verified.
- In the “Display” tab, set the “Dimensions” to “Other 100”.
- In the “Display” tab, set the “Lines Per Screen” to “30”.
- In the “Display” tab, set the “Cursor” to “Block”.
- In the “Colors” tab, set the prefered colors.

NOTE: The Terminal Setup only needs to be completed once. When Terminal Setup is complete, save the configuration settings. Selecting the “File” menu tab and click “Save Terminal Setup As…” and name and save the file in a convenient location. Alternatively, when PowerTerm® Lite is closed it will prompt to save changes.



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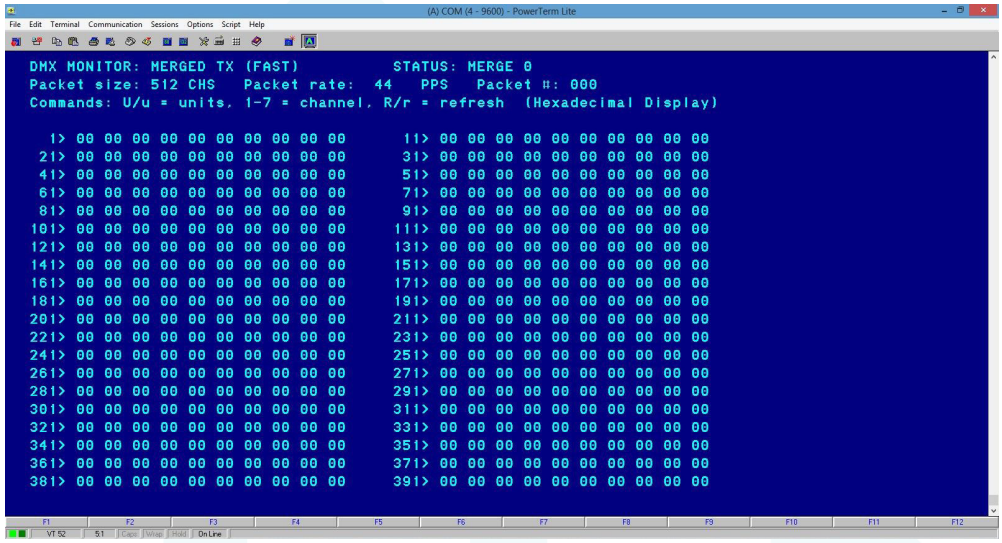
PowerTerm® Lite Screenshot



USB Driver Information

When the USB Tech Port is first connected to a PC, the PC will automatically try to find a driver. It is unlikely to find a driver automatically, so the applicable USB driver will need to be downloaded and installed.

The USB interface chip (FT245R USB FIFO) on the DMX-6PM controller board is manufactured by FTDI (Future Technology Devices International) and requires an FTDI driver loaded on the same PC as the PowerTerm® Lite software.

The driver type required is VCP (Virtual COM Port). The VCP driver makes the USB device appear as though it is connected to a COM port.

1. Select the applicable driver to download from the following link:
   http://www.ftdichip.com/Drivers/VCP.htm
   The driver download is a ZIP archive folder named: CDM 2.08.28 WHQL Certified. Save it in a convenient location.
2. Create a folder in a convenient location (recommend C:\FTDI Driver), and extract the ZIP archive folder contents to the newly created folder.
3. Connect the USB Tech Port to the PC. The “Found New Hardware Wizard” automatically pops up. Select the “Install from a list or specific location (Advanced)” option and click “Next” to continue.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
FT245R USB FIFO
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

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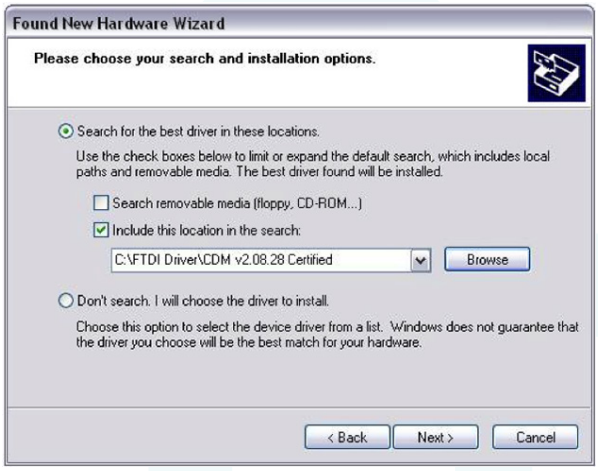
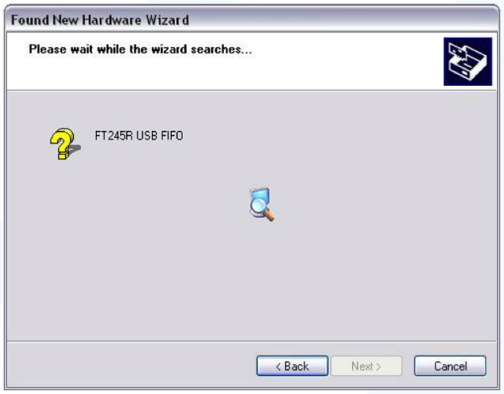
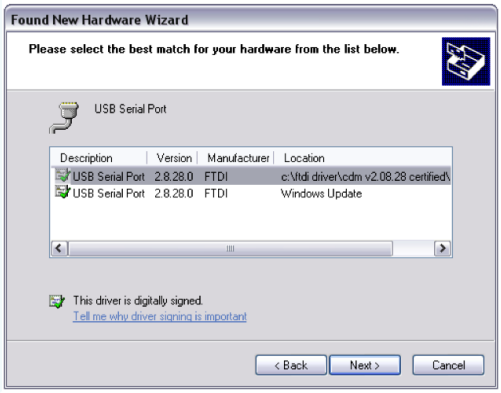
4. Select the “Search for the best driver in these locations” and “Include this location in the seach” options and click “Browse” to continue. Select the file folder created in step 2. Once the folder is selected (highlighted), click “OK” and then “Next” to continue.

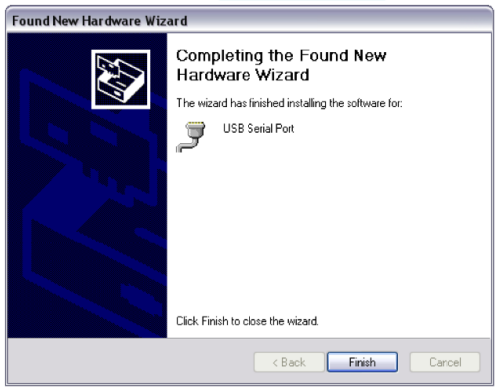

Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
C:\FTDI Driver\CDM v2.08.28 Certified
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

5. Be patient. It can take several minutes for the PC to find the driver. Once the driver is found, ensure the correct file path is selected (highlighted) and click “Next” to continue.




Found New Hardware Wizard
Please select the best match for your hardware from the list below.
USB Serial Port
Description
Version
Manufacturer
Location
USB Serial Port 2.8.28.0 FTDI c:\ftdi driver\cdm v2.08.28 certified\
USB Serial Port 2.8.28.0 FTDI Windows Update
This driver is digitally signed.
Tell me why driver signing is important
< Back
Next >
Cancel

6. Once the PC completes the driver installation, click “Finish” to continue.



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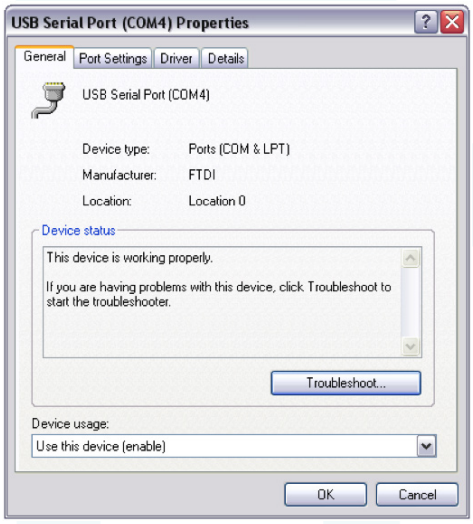
7. Open Device Manager. Under the "Ports (COM & LPT)" devices, locate and select (double click) the "USB Serial Port (COM#)" the Tech Port is plugged into. In the "General" tab, verify the "Manufacturer: FTDI" and status "This device is working properly." Note/record the COM port number indicated as it is required for the terminal emulator PowerTerm®.



NOTE: Johnson Systems Inc. (JSI) echoes the important note provided by Future Technology Devices International Limited (FTDI) regarding their driver software:

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User Manual
DMX 6-PORT MERGER
Rev. 1

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